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Information Science and Technology Center Seminar

Pablo A. Parrilo
Department of Electrical Engineering & Computer Science
Massachusetts Institute of Technology

"Consistency of Preferences and Near-Potential Games"

Wednesday, October 20, 2010
3:00 - 4:00 PM
TA-3, Bldg. 1690, Room 102 (CNLS Conference Room)

Abstract: Exact potential games are those where the preferences of the strategy profiles of the different players are globally consistent, and therefore the players' payoffs can be aggregated through a joint function. In this talk, we analyze the general situation where there are local or global inconsistencies between the preferences of the different players. For this, we introduce a natural decomposition of multiplayer games in terms of potential and harmonic components. Besides its intrinsic interest, this decomposition facilitates the study of equilibrium and convergence properties of natural game dynamics. We discuss the implications for cooperative control problems, pricing schemes, and efficiency loss, and illustrate the results and techniques through an example of power control in wireless networks. Joint work with Ozan Candogan, Ishai Menache, and Asu Ozdaglar (MIT)

Biography: Pablo A. Parrilo received an Electronics Engineering undergraduate degree from the University of Buenos Aires, and a Ph.D. in Control and Dynamical Systems from the California Institute of Technology. He has held short-term visiting appointments at the University of California at Santa Barbara (Physics), Lund Institute of Technology (Automatic Control), and UC Berkeley (Mathematics). From October 2001 through September 2004, he was Assistant Professor of Analysis and Control Systems at the Automatic Control Laboratory of the Swiss Federal Institute of Technology (ETH Zurich). He is currently the Finmeccanica Career Development Professor of Engineering at the Department of Electrical Engineering and Computer Science of the Massachusetts Institute of Technology, where he is also affiliated with the Laboratory for Information and Decision Systems (LIDS) and the Operations Research Center (ORC).

Professor Parrilo is the recipient of the 2005 Donald P. Eckman Award of the American Automatic Control Council, as well as the 2005 SIAM Activity Group on Control and Systems Theory (SIAG/CST) Prize. He was also a finalist for the Tucker Prize of the Mathematical Programming Society for the years 2000-2003. He is currently on the Board of Directors of the Foundations of Computational Mathematics (FoCM) society, and a member of the Editorial Board of the MOS/SIAM Book Series on Optimization.

His research interests include optimization and game theory methods for engineering applications, control and identification of uncertain complex systems, robustness analysis and synthesis, and the development and application of computational tools based on convex optimization and algorithmic algebra to practically relevant engineering problems.

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For more information contact the technical host Misha Chertkov, chertkov@lanl.gov, 665-8119
or the institutional host Frank Alexander, fja@lanl.gov, 665-4518.
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